

**SITE ASSESSMENT REPORT
FOR
SATRALLOY/SATRA CONCENTRATES
STEUBENVILLE, JEFFERSON, OH
U.S. EPA ID: NONE
SSID: NONE
TDD: 05-9110-014
PAN: EOH0945SAA**

December 11, 1991

Prepared for:

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Emergency Support Section
EPA - REGION V

Contract Number: 68-WO-0037

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ecology and environment, inc.

ONE TECHVIEW DRIVE, CINCINNATI, OHIO 45215, TEL. (513) 733-3107
International Specialists in the Environment

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INTRODUCTION

The Ecology and Environment, Inc., Technical Assistance Team (TAT) was tasked by the United States Environmental Protection Agency (U.S. EPA) through Technical Directive Document #05-9110-014 to conduct a site assessment of the Satralloy/Satra Concentrates Co. site located at County Road 74, Steubenville, Jefferson County, Ohio. This site was selected for investigation by the Emergency and Enforcement Response Branch based on a referral from the U.S. EPA Resource Conservation and Recovery Act (RCRA) program office and the Ohio EPA Southeast District Resource Conservation and Recovery Act (RCRA) program office. The Ohio EPA RCRA inspectors had reported observing uncontrolled access to the active portions of the facility and evidence that motor bikes and all-terrain vehicles were riding through the facility.

TAT performed a site assessment of Satra Concentrates which included an extensive file search, a drive by inspection of the site, an interview with the operator of the facility, an interview with Jefferson County safety and law enforcement officials, and photodocumentation of the facility. TAT did not perform an on-site inspection of the facility because the facility operator denied TAT access to the site.

BACKGROUND

Satra Concentrates, formerly Satralloy, is an active facility which reclaims ferrochromium from on-site stockpiles of high carbon slag.

The facility is located on County Rd. 74, Steubenville, Jefferson County, Ohio. The mailing address of the facility is P.O. 536, Steubenville, Ohio 43952.

Satra Concentrates was a ferrochromiumsilicon manufacturing plant which started operation in 1974. By-products generated while the plant was in operation included high carbon slag, low carbon slag. The facility also generated K090 and K091 wastes which were staged in piles on the top of a hill above the plant operations area.



STEUBENVILLE

OHIO



ecology and environment, inc.

Technical Assistance Team

Region V

TITLE
SITE LOCATION MAP

FIGURE #
1

SITE
SATRALLOY SITE

SCALE
1:24,000

DRAWN BY/DATE
S. SIRHAN/1991

CITY STATE
STEUBENVILLE OHIO

PAN #
EOH0945SAA

In 1979, the operator of Satra Concentrates installed baghouses to reduce K090 and K091 dust emissions to the ambient air generated from the manufacturing process. The accumulated dust was removed and piled on the top of the hill above the plant area.

On November 30, 1980, the U.S. EPA excluded K090 and K091 dust and sludge generated by ferrochromiumsilicon production from the regulated hazardous waste list under the Bevill Amendment Waste. These wastes were re-listed under RCRA hazardous wastes regulation on March 13, 1989. The relisting of K090 and K091 went into effect in the State of Ohio Administration Code 3745051-03 in December, 1989.

In 1982, Satra Concentrates ceased manufacturing of ferrochromium-alloy due to high operating costs, and the lack of a market for their products.

In 1984, Satra Concentrates started reclaiming ferroalloys from high carbon slag via a water concentrate process. The estimated amount of slag present at the site was more than 100,000 tons of high carbon slag and 700,000 tons of low carbon slag. Two chrome ore stockpiles containing K090 and K091 waste were also present at the site. The sludge and wastes generated by the water concentrate process were also stockpiled on site. These sludges and wastes do not meet criteria for hazardous waste as described in subpart B & C of 40 CFR 262.11.

The operator of Satra Concentrates applied to the U.S. EPA Waste Management Division, to terminate the form of interim status, as well as to rescind the U.S. EPA waste generator identification number ID# OHD010467538 which had been applied to the facility. The operator justified the application on the basis that Satra Concentrates ceased ferrochromiumsilicon manufacturing activities. The U.S. EPA honored the application and the U.S. EPA ID# OHD010467538 was canceled.

The Ohio EPA reported in 1988 that Satra Concentrates was assigned a medium priority for future site assessment activities. The OEPA also considered the potential for heavy metals contamination of groundwater from the open dumped wastes on-site, since residences within a 3 mile radius of the site rely on private wells for their water supplies. The OEPA did not perform a site assessment.

The Ohio EPA, Division of Solid Waste Management, inspected Satra

Concentrates facility on June 8, 1989, to determine compliance with hazardous waste regulations. According to the results of inspections Satra Concentrates was cited for open dumping of solid waste generated by the water concentrate process of the baghouse dust. Also the operator of Satra Concentrates was requested to provide adequate security to prevent unauthorized entry to the active portions of the facility as described in 40 CFR 265.14.

On October 3, 1991, Satra Concentrates site was referred to the U.S. EPA Superfund Office, Waste Management Division, by the U.S. EPA RCRA Office. The overriding concern which resulted in this referral was due to unrestricted access to the two chrome ore piles on the top of the hill above the plant area.

SITE ACTIVITIES AND FIELD OBSERVATIONS

Satra Concentrates is an active ferroalloy processing facility located approximately 5 miles southwest of Steubenville, Jefferson County, Ohio.

The site occupies approximately two square miles on the top of a geomorphologically distinguished plateau. The average slope at the north and northeast parts of this plateau is approximately 55% while the average slope on the west side is 32%. These figures were obtained from USGS topographic maps, 7.5 minutes series. The site is situated between the east and west fork of Cross Creek which runs to the east, west and south of the site. The area north of the site is heavily wooded. The area around the site is sparsely populated. There is approximately 15 homes within a one mile radius of the site.

The main entrance to the facility is located on Gould Road on the south side of the facility. The facility is manned eight hours a day and there is a security guard on duty 24 hours a day. The office building is located at the main entrance. There are two ferroalloy water concentrates processing plants located 150 feet north of the office building.

On October 24, 1991, TAT performed a drive-by site inspection and observed a slag pile (2 miles long and 320 feet high) on the top of a hill above the plant operation area as well as smaller similar piles

scattered throughout the facility. TAT did not observe any unauthorized personnel on the wastepiles, or any evidence of previous unauthorized entrances to the site.

TAT requested access to the abandoned wastepiles to facilitate further site assessment activities. The operator of Satra Concentrate denied access to all TAT members. He did however accept TAT's request to provide information about the site. The operator stated that the K090 and K091 hazardous wastepiles are abandoned and have not been managed since December, 1989. He added that the facility is manned eight hours a day and that there is a security guard 24 hours. The operator also stated that there were no trespassing activities due to the security of the facility.

TAT also interviewed a member of the Jefferson County Sheriff's Office. The Sheriff's representative stated that there have been no verbal or filed complaints received by the department from residences or the site operator regarding trespassing activities. Also, there are no records of any incidents occurring at that area caused by site activities.

The facility is naturally secured from the north, east, west and southwest by very steep slopes. The only available access to the wastepiles is through the office building and plant area which is manned 24 hours a day. There is no visible evidence of surficial migration of waste from the site to the nearby Cross Creek or the residential areas.

ANALYTICAL RESULTS

On October 24, 1991, TAT inspected the perimeter of the Satra Concentrates and requested the facility operator's permission to inspect the abandoned wastepiles. TAT was denied access to the site, therefore no samples were collected.

DISCUSSION OF POTENTIAL THREATS

The following factors outlined in 40 CFR 300.415 (b) (2) of the National Contingency Plan are discussed hereafter to address the potential threats at the Satra Concentrates Site.

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

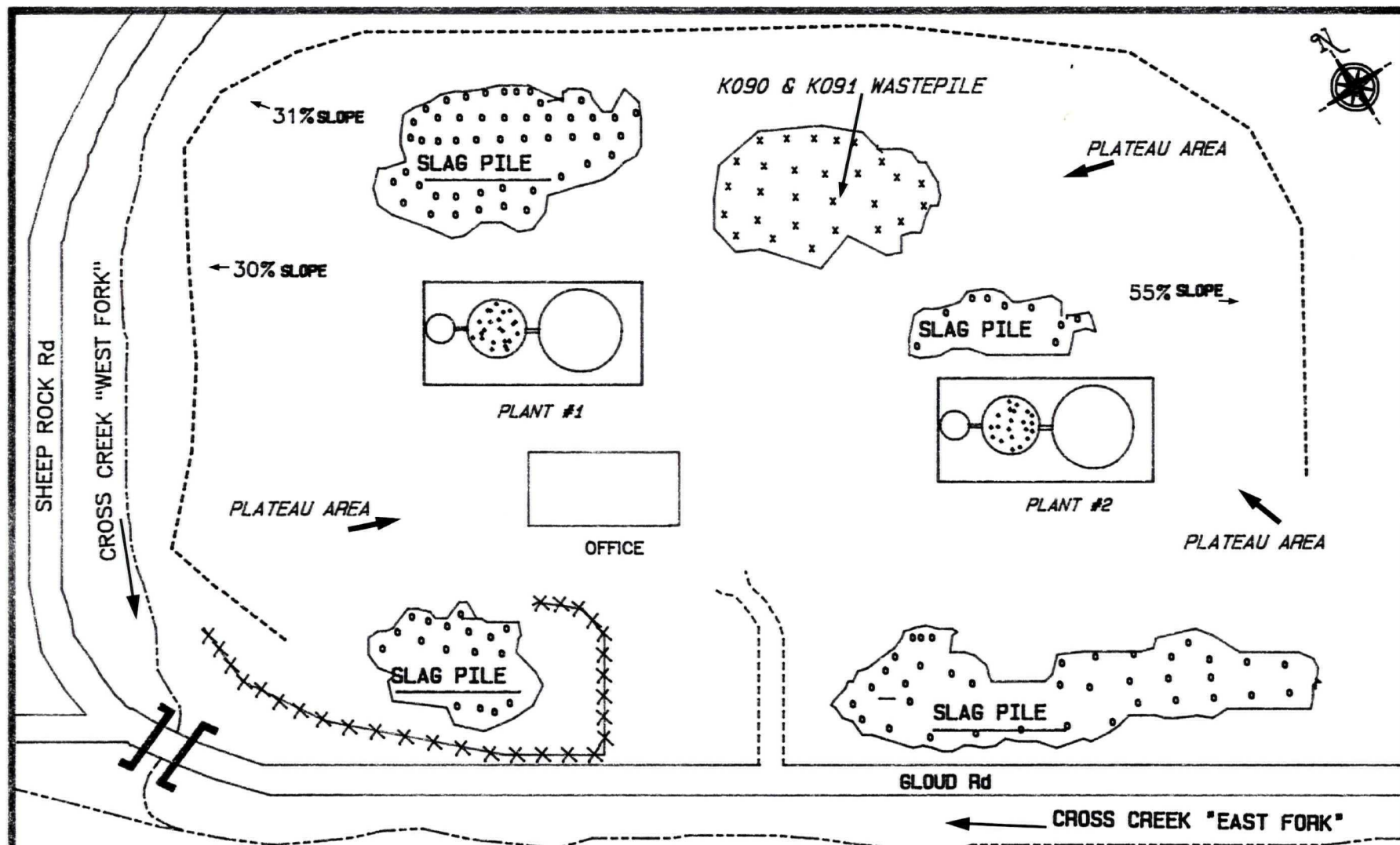
The two chrome ore wastepiles present at Satra Concentrates are abandoned. According to the facility operator, the facility is manned 8 hours a day and there is a security guard on duty 24 hours a day. TAT did not observe any children playing on wastepiles or any evidence of unauthorized personnel entry to the facility due to the specific site location as well as the security at the entrance to the site. TAT observed a partial fence around the southwest corner of the site. No evidence of surficial migration of hazardous substance were observed by TAT. All these conditions do not facilitate an access to the wastepiles and do not appear to pose an immediate threat to human health or the environment.

Actual or potential contamination of drinking water supplies and/or sensitive environment.

The residences within a three mile radius of Satra Concentrates rely on private wells for their water supplies. There are no file records of groundwater sampling activity in the area of the site to assess the quality of groundwater. However, there is a potential for heavy metal contamination of groundwater in that area, therefore further investigation of the groundwater quality in the area of the site could determine the actual or potential impact Satra Concentrates has on the groundwater quality in the area.

SUMMARY

The Ecology and Environment Inc., Technical Assistance Team performed a site assessment of Satra Concentrates. TAT did not collect any environmental samples from the wastepiles or the perimeter of the site due to the fact that TAT's request for access to the site was denied by the facility operator. TAT did not identify any evidence which would suggest the need for an immediate removal action. However, TAT identified an area which might warrant further study, specifically assessing the quality of groundwater in the site area.



ecology and environment, inc.
 Technical Assistance Team
 Region V

SITE
 SATRALLOY SITE
 CITY STEUBENVILLE STATE OHIO

SCALE
 NONE
 PAN
 EOH0945SAA

TITLE
 SITE FEATURE MAP

FIGURE #
 2

DRAWN BY:
 SAMMY SIRHAN

DATE
 10 / 24 /91

ATTACHMENT A

OHIO'S STATE NATURAL AREAS AND NATURE PRESERVE SYSTEM

Under the Ohio Natural Areas Act of 1970, a statewide system of natural areas and nature preserves has been established in Ohio. Nature preserves vary in the degree to which they can tolerate public use. Some of the areas are so fragile that they are unsuited for general use, while others have well-marked trails and interpretive facilities. Preserves that are open to the public are intended for minimum impact visitor activities such as nature study, photography, hiking and bird-watching. (A brochure detailing the open preserves is available from the Division.)

Preserves listed below with a ♦ require a permit for access. Research in any preserve also requires a permit. Permit information can be obtained by contacting the managing agency. If no agency is listed, the site is managed by the Ohio Division of Natural Areas and Preserves (address on reverse side).

The preserves are listed below in the order of addition to the natural area system.



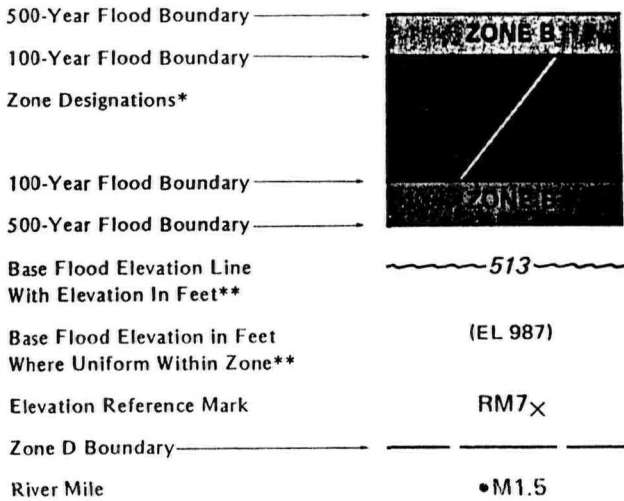
<u>NO.</u>	<u>PRESERVE (Approx. acres)</u>	<u>COUNTY</u>	<u>MANAGING AGENCY</u>
1	Fowler Woods (133)	Richland	
2	♦ Little Rocky Hollow (259)	Hocking	
3	Caesar Creek Gorge (463)	Warren	
4	Adams Lake Prairie (26)	Adams	
5	♦ Cranberry Bog (13)	Licking	
6	♦ Seymour Woods (106)	Delaware	
7	Highbanks (206)	Franklin, Delaware	Columbus/Fran. Co. Metro Parks
8	Eagle Creek (441)	Portage	
9	Shallenberger (88)	Fairfield	
10	Blackhand Gorge (980)	Licking	
11	Rockbridge (100)	Hocking	
12	Knox Woods (30)	Knox	
13	Gahanna Woods (51)	Franklin	
14	Hueston Woods (200)	Preble, Butler	
15	♦ Sheick Hollow (151)	Hocking	
16	Stage's Pond (178)	Pickaway	
17	Marie J. Desonier (491)	Athens	
18	Irwin Prairie (187)	Lucas	
19	Tinkers Creek (786)	Summit, Portage	
20	♦ Kiser Lake Wetlands (51)	Champaign	
21	Mentor Marsh (647)	Lake	
22	Edward S. Thomas (319)	Franklin	Columbus/Fran. Co. Metro Parks
23	Goll Woods (321)	Fulton	
24	♦ Christmas Rocks (208)	Fairfield	
25	Headlands Dunes (16)	Lake	
26	Greenbelt Areas (97)	Hamilton	Hamilton Co. Park District
27	Newberry (50)	Hamilton	Hamilton Co. Park District
28	Spring Beauty Dell (41)	Hamilton	Hamilton Co. Park District
29	Trillium Trails (23)	Hamilton	Hamilton Co. Park District
30	Lake Katharine (1850)	Jackson	
31	Old Woman Creek (572)	Erie	
32	Cedar Bog (428)	Champaign	Ohio Historical Society
33	Kyle Woods (82)	Mahoning	

NO.	PRESERVE (Approx. acres)	COUNTY	MANAGING AGENCY
34	Sharon Woods Gorge (21)	Hamilton	Hamilton Co. Park District
35	Walter A. Tucker (55)	Fairfield	Columbus/Fran. Co. Metro Parks
36	Conkles Hollow (87)	Hocking	
37	Siegenthaler Esker (37)	Champaign	
38	Hach-Otis (80)	Lake	
39	♦ Dean A. Culberson (238)	Clinton	
40	Bigelow Cemetery Prairie (1)	Madison	
41	♦ Crooked Run (78)	Clermont	
42	♦ Portage Lakes Wetland (6)	Summit	
43	♦ Lou Campbell (170)	Lucas	
44	Morris Woods (104)	Licking	
45	Sheldon Marsh (435)	Erie	
46	Clifton Gorge (269)	Greene	
47	Gross Woods (49)	Shelby	
48	♦ Brown's Lake Bog (80)	Wayne	The Nature Conservancy
49	♦ DuPont Marsh (114)	Erie	
50	♦ Compass Plant Prairie (16)	Lawrence	
51	Jackson Bog (6)	Stark -	
52	Springville Marsh (161)	Seneca	
53	♦ Liberty Fen (9)	Logan	
54	♦ Prairie Road Fen (95)	Clark	
55	♦ Gott Fen (45)	Portage	
56	♦ Triangle Lake Bog (61)	Portage	
57	♦ Frame Lake/Herrick Fen (110)	Portage	The Nature Conservancy
58	♦ Mud Lake (25)	Williams	
59	♦ Miller Nature Sanctuary (88)	Highland	
60	Smith Cemetery Prairie (1)	Madison	
61	Erie Sand Barrens (32)	Erie	
62	♦ Drew Woods (15)	Drake	
63	♦ Ladd Natural Bridge (35)	Washington -	
64	♦ Kent Bog (42)	Portage	
65	♦ Zimmerman Prairie (4)	Greene	
66	Chaparral (67)	Adams	
67	♦ Springfield/Gallagher Fen (91)	Clark	
68	♦ Vermilion River (82)	Huron	
69	♦ Allen F. Beck (2234)	Hocking	Columbus/Fran. Co. Metro Parks
70	♦ Pickerington Ponds (406)	Franklin, Fairfield	Columbus/Fran. Co. Metro Parks
71	♦ Tummonds SR Preserve (86)	Portage	
72	♦ Little Beaver Creek (454)	Columbiana	
73	♦ Sears Woods (99)	Crawford	
74	Goode Prairie (28)	Miami -	Miami County Parks
75	♦ John & Emma Pallister (85)	Ashtabula -	
76	♦ Carmean Woods (39)	Crawford	
77	♦ Swamp Cottonwood (21)	Medina	
78	♦ Boord (89)	Washington -	
79	Milford Center Prairie (7)	Union	Dayton Power & Light
80	♦ Johnson Woods (193)	Adams	
81	♦ Emerald Hills (74)	Belmont	
82	Audubon Islands (170)	Lucas	Toledo Metroparks
83	Greenville Falls (87)	Miami -	
84	♦ Lakeside Daisy (19)	Ottawa	
85	♦ Whipple (187)	Adams	
86	♦ Halls Creek Woods (278)	Warren	
87	Davey Woods (103)	Champaign	
88	♦ Betsch Fen (35)	Ross	The Nature Conservancy
89	♦ Evans Beck Memorial (10)	Portage	The Nature Conservancy
90	♦ Flatiron Lake Bog (68)	Portage	The Nature Conservancy
91	♦ Kitty Todd (36)	Lucas	The Nature Conservancy
92	♦ Rothenbuhler Woods (44)	Monroe -	The Nature Conservancy
93	♦ Strait Creek Prairie (75)	Pike	The Nature Conservancy
94	♦ Clearfork Gorge (29)	Ashland	
95	♦ Mantua Bog (63)	Portage	
96	♦ Crane Hollow (1112)	Hocking	Crane Hollow, Inc.
97	♦ Crabill Fen (32)	Ashland	
98	Marsh Wetlands (152)	Portage	ODNR-Division of Wildlife
99	♦ Karlo Fen (15)	Summit	
100	♦ Stratford Woods (95)	Delaware	Stratford Ecological Center
	Total (18,756 acres)		



Ohio Department of Natural Resources • Division of Natural Areas and Preserves • 1889 Fountain Square Ct. • Columbus, Ohio 43224 • 614/265-6453
George V. Volnovich • Governor Frances S. Buchholzer • Director

KEY TO MAP



**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:

JUNE 10, 1977

FLOOD HAZARD BOUNDARY MAP REVISIONS:

MAY 28, 1982

FLOOD INSURANCE RATE MAP EFFECTIVE:

JANUARY 5, 1984

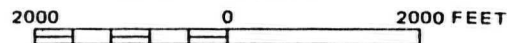
FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

COUNTY OF
JEFFERSON,
OHIO
(UNINCORPORATED AREAS)

PANEL 125 OF 145

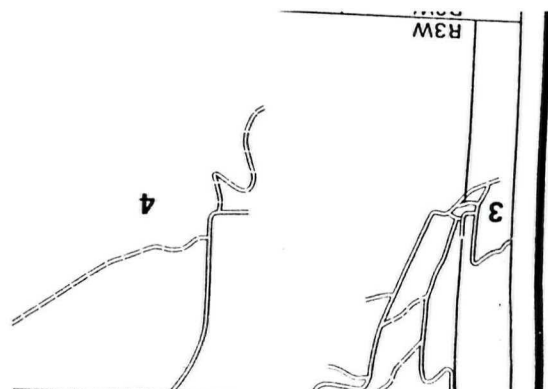
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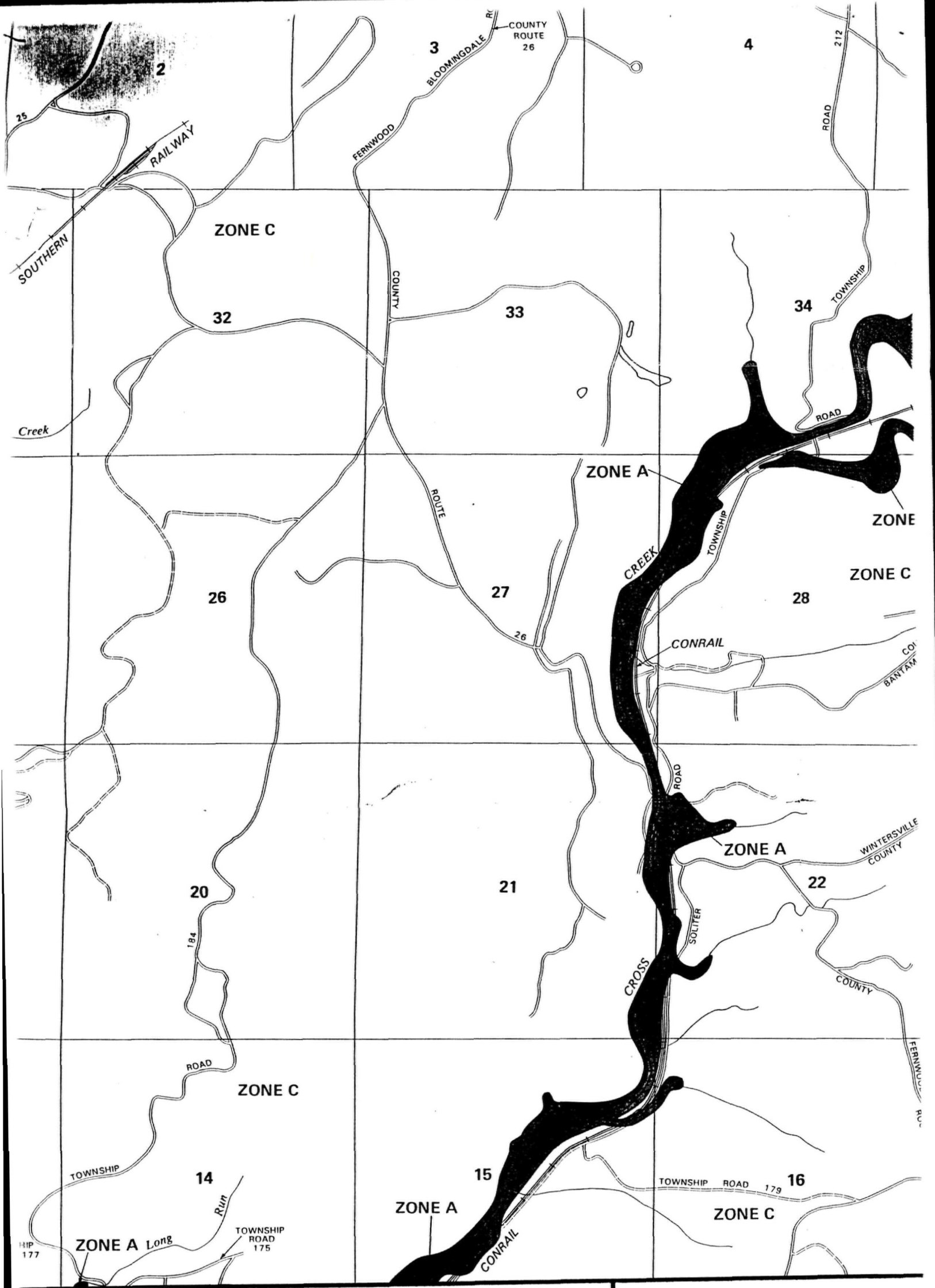
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EFFECTIVE DATE
JANUARY 5, 1984

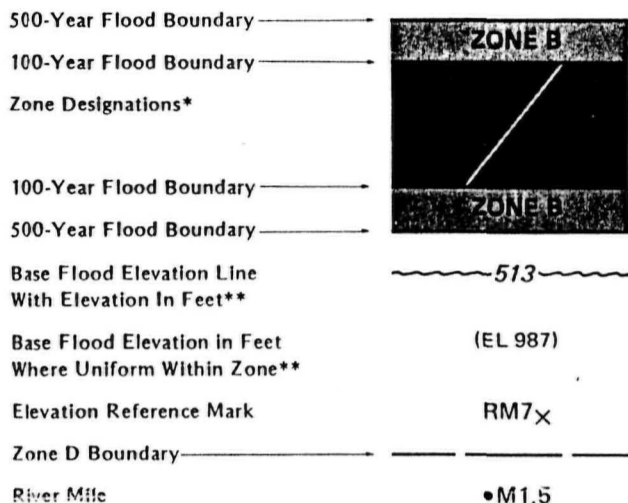


Federal Emergency Management Agency





KEY TO MAP



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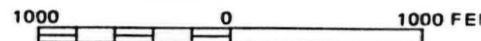
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APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE P

FIRM FLOOD INSURANCE RATE

COUNTY OF
JEFFERSON,
OHIO
(UNINCORPORATED AR

PANEL 115 OF 145

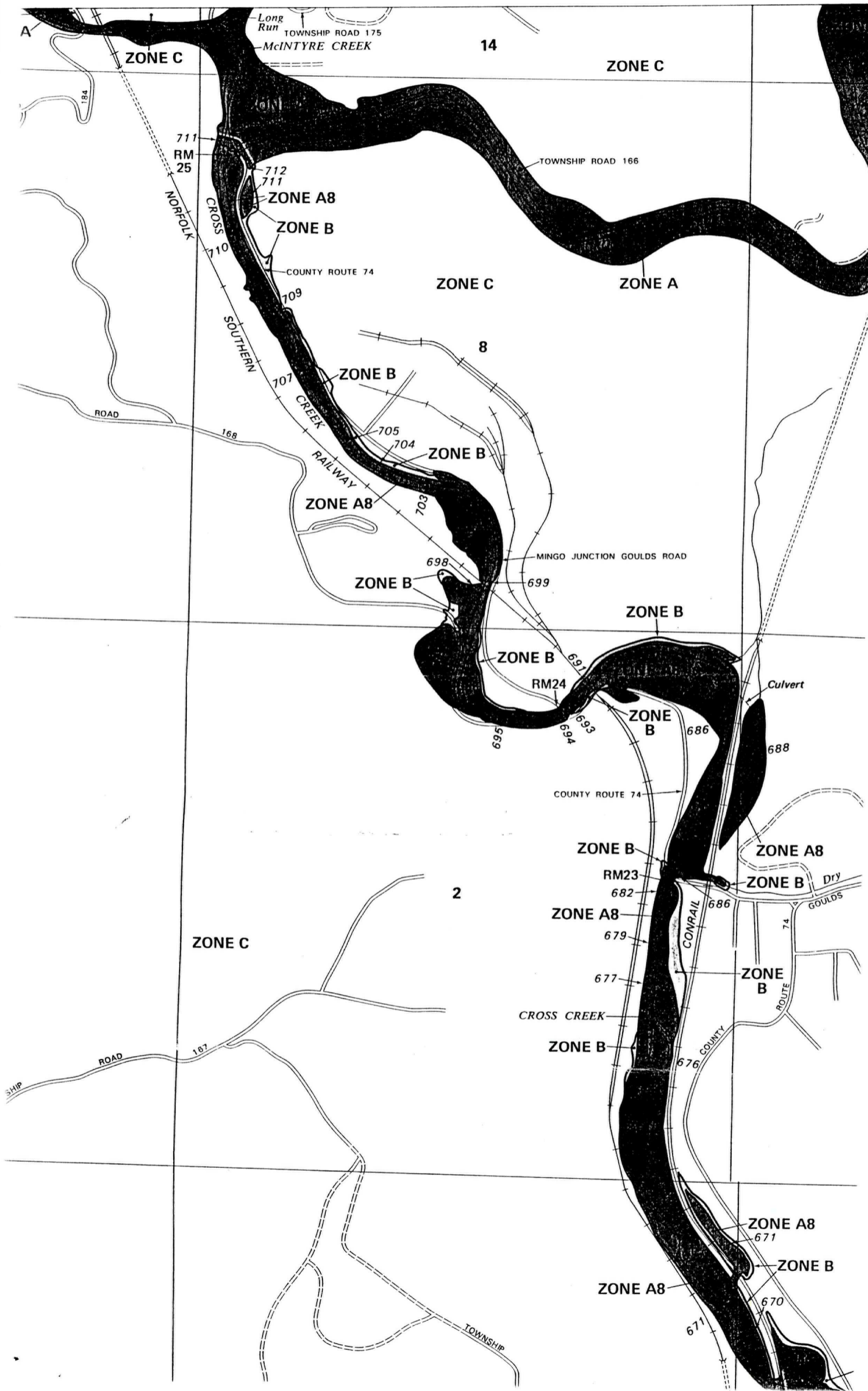
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COMMUNITY-PANEL NI

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EFFECTIVE
JANUARY 5,
1984



Federal Emergency Management

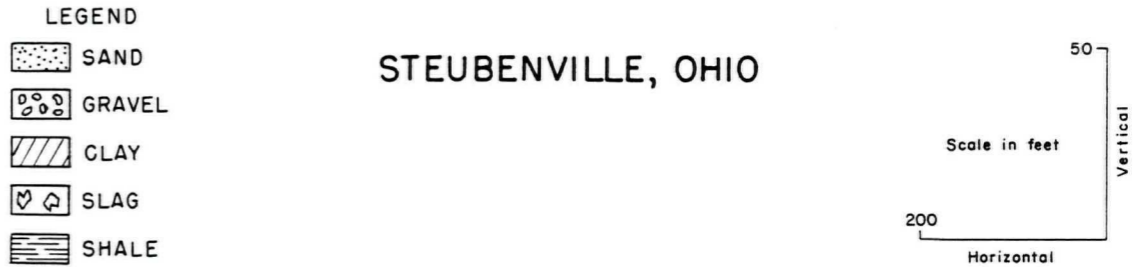
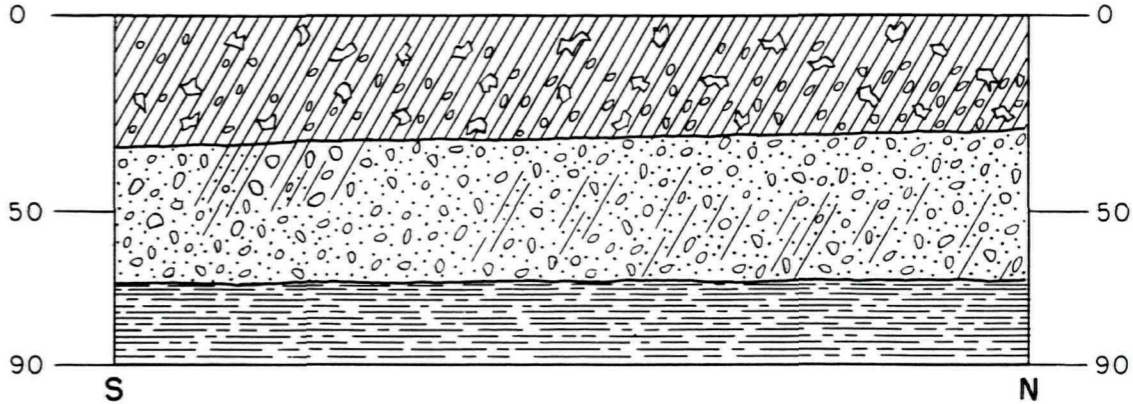


Yellow Creek and Cross Creek Basins comprise two general classes. The consolidated layers of sandstone, shale, limestone, and coal; and the unconsolidated deposits of sand, gravel, and clay. The following section briefly describes the physical and water-bearing characteristics of these formations.

GENERALIZED STRATIGRAPHIC TABLE OF THE
ROCKS IN YELLOW AND CROSS CREEK BASINS

System or Series		Group or Formation	Character of Material	Water-bearing Characteristics
Quaternary	Recent		Clay, silt, fine sand and gravel deposits beneath the narrow flood plains of principal valleys.	Generally poor source of ground water. However, 5 to 25 gpm may be obtained from shallow wells where permeable deposits exist.
	Pleistocene		Relatively thick layers of sand and gravel beneath thick, sandy, gravelly clay.	Yields of as much as 2000 gpm have been reported from wells developed in permeable glacial deposits beneath the Ohio River flood plain.
Pennsylvanian		Conemaugh	Undifferentiated layers of thin to massive sandstone interbedded with shale, limestone, coal, and fireclay. Formations are not regionally continuous but change from one locality to another.	Regionally the bedrock is a poor source of underground water. Yields average approximately 2 gpm. However, locally reported yields are as much as 10 gpm.
		Allegheny		
		Pottsville		

The underground water potential for the Yellow Creek and Cross Creek Basins ranges from less than 1 gallon per minute (gpm) to more than 1500 gpm. Ground-water supplies for industrial development are confined to the relatively limited flood plain of the Ohio River. The glacial outwash deposits beneath the flood plain are as much as 110 feet thick in the vicinity of Toronto. Wells drilled near Stratton reveal as much as 80 feet of permeable sand and gravel. However, wells drilled in the Steubenville-Mingo Junction area encounter as much as 45 feet of semi-permeable sandy, gravelly clay above approximately 25 feet of water-bearing sand and gravel. Selected wells, believed to show typical conditions, are illustrated in the cross-sections. Extensive test drilling by the Wheeling Steel Corporation in Steubenville, and the City of Mingo Junction have proven the existence of large industrial supplies adjacent to the Ohio River. It has been estimated that by using induced infiltration, there would be a maximum ground-water potential of about 10 million gallons per day (mgd) per mile of river front that can be considered favorable for the development of large underground-water supplies. The yield depends on the size, location,



The depth to the bedrock in the upland areas is about 3 feet and bedrock wells range in depth from 40 to as much as 390 feet. A large percentage of the domestic water supplies for these basins are supplemented with cisterns.

Records of approximately 1150 water well logs in the Yellow Creek and Cross Creek Basins are on file at the Ohio Division of Water. The locations of typical wells are indicated on the map.

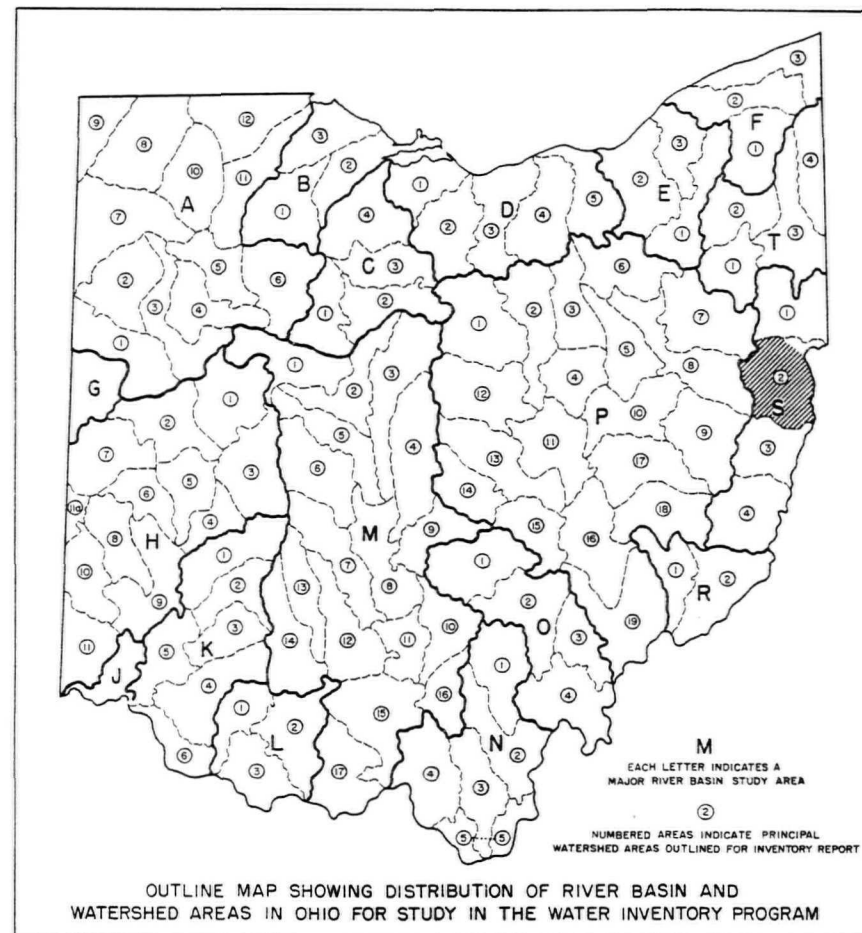
QUALITY OF WATER

Partial analysis of water derived from the sand and gravel of glacial origin is shown in the following table. The City of Mingo Junction derives its supply from the glacial sand and gravel deposits adjacent to the Ohio River. The analysis for this well was made in 1955 by the U. S. Geological Survey, Quality of Water Branch.

Well Number	C-1
Depth	66 ft.
Water-bearing formation	Glacial Sand & Gravel
	Parts per million
Iron	0.29
Chloride	40.
Dissolved Solids	590.
Total Hardness	378.
pH	6.8

OHIO WATER PLAN INVENTORY
1959
**YELLOW CREEK, CROSS CREEK
AND McINTYRE CREEK BASINS**
UNDERGROUND WATER RESOURCES

Prepared by JAMES J. SCHMIDT, Geologist,
Ohio Division of Water



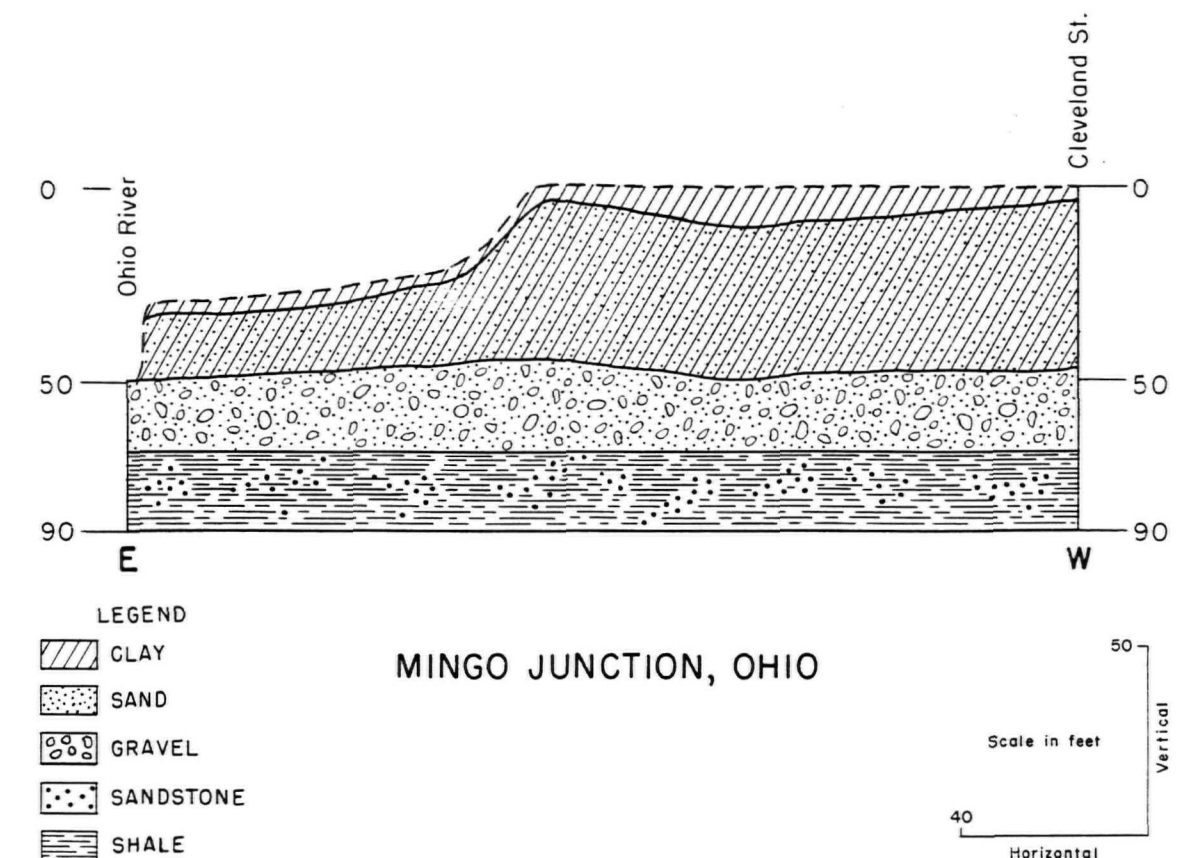
The earth on which we live is a natural reservoir for the temporary storage of precipitation. It is composed of consolidated and unconsolidated rocks which absorb and transmit water through the cracks, crevices, and pore spaces within the various formations. The quantity of water absorbed depends on the size, kind, and number of openings in the rocks. Therefore, the quantity of underground water available depends on the composition of the earth at the specific location.

construction and age of the wells. Large yields may be developed initially, however, the ground water generally has a rather high iron content and the yield declines owing to the incrustation of the well screens and water-bearing formations resulting from the oxidation of the iron.

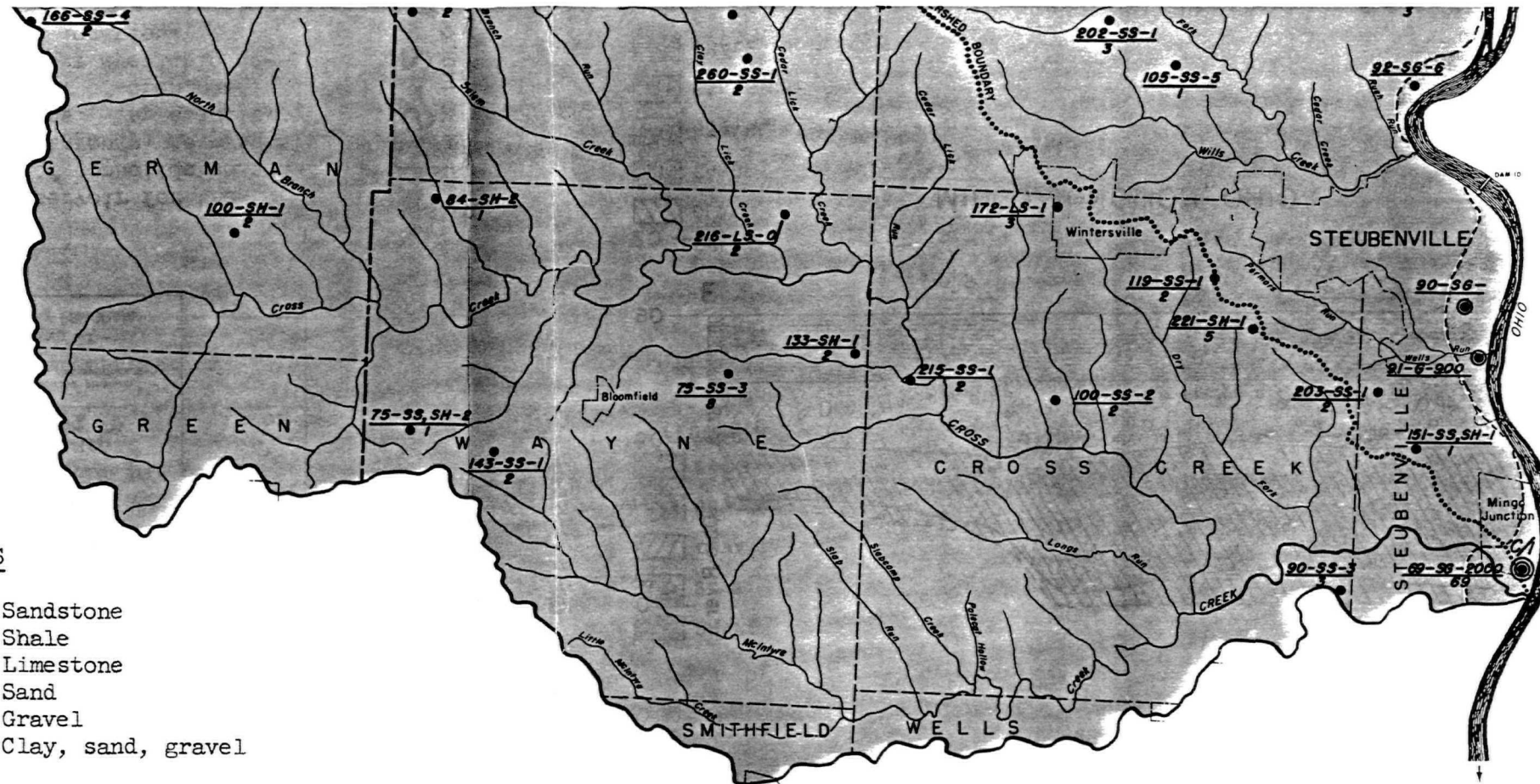
The unconsolidated deposits beneath the relatively broad flood plains adjacent to Yellow, Island and Cross Creeks may yield as much as 25 gpm to properly constructed large diameter drilled or dug wells. These deposits range from less than a few feet to more than 50 feet thick. Regionally, these deposits consist of clay, silt, fine sand, sand and gravel. Local test drilling should encounter permeable layers of sand and gravel adjacent to these streams. These deposits are not shown on the map, owing to their limited extent.

The bedrock beneath the entire basin consists of alternating layers of sandstone, shale, fireclay, coal and limestone. The rock layers are extremely variable in their composition and thickness. Masses of sandstone grade into thin bedded shales within a few hundred feet and the limestone occurs in thin patches. There are no important water-bearing formations, primarily because the formations are not extensive laterally. Reported yields from the bedrock range from less than 1 gpm to more than 10 gpm. Underground water occurs in the cracks and crevices rather than in the pores. Shales often are more productive than the sandstone.

CROSS SECTIONS SHOWING CHARACTER OF MATERIAL FILLING BURIED VALLEY NEAR MINGO JUNCTION AND STEUBENVILLE, OHIO.







EXPLANATION OF SYMBOLS


- | | |
|-------------------|-----------------------|
| • Domestic well | ss Sandstone |
| ⊙ Industrial well | sh Shale |
| ⊙ Municipal well | ls Limestone |
| | s Sand |
| | g Gravel |
| | un Clay, sand, gravel |

⊙ Chemical analysis in text.


Total depth (Ft.) - Water-bearing formation - Yield (gpm)
Depth to bedrock (Ft.)

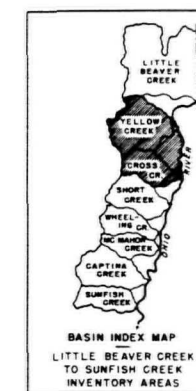
LEGEND

AREAS IN WHICH DRILLED WELLS MAY YIELD
 AS MUCH AS 1000 GALLONS OR MORE PER MINUTE

 Relatively thick permeable deposits of sand and gravel beneath a shallow layer of semi-permeable gravelly clay. Where these deposits are in contact with the Ohio River, the estimated potential yield is about 10 million gallons per day per mile of river frontage.

AREAS IN WHICH WELLS SELDOM YIELD
 AS MUCH AS 5 GALLONS PER MINUTE

 Undifferentiated layers of thin to massive sandstone interbedded with shale, fireclay, limestone or coal. Yields average less than 2 gpm, however, wells drilled or dug on the broader flood plains of Yellow, Island and Cross Creeks may yield as much as 25 gpm.



MAP OF THE
 YELLOW CREEK AND
 CROSS CREEK BASINS
 SHOWING

AVAILABILITY OF
 UNDERGROUND WATER

PUBLISHED BY - STATE OF OHIO, DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER

SCALE IN MILES

FLOOD INSURANCE STUDY



COUNTY OF JEFFERSON,
OHIO

UNINCORPORATED AREA



FLOOD PLANNING UNIT
DO NOT REMOVE

JULY 5, 1983



Federal Emergency Management Agency

COMMUNITY NUMBER - 390294

COUNTY OF JEFFERSON, OH

(UNINCORPORATED AREA)

FLOODWAY DATA

YELLOW CREEK NORTH FORK YELLOW CREEK WILL CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (FEET)	INCREASE
CROSS CREEK								
A	0.979	267	4426	3.1	667.9	661.9 ²	662.6	0.7
B	1.165	591	7747	1.8	667.9	662.1 ²	662.8	0.7
C	1.422	163	2184	6.4	667.9	661.9 ²	662.9	1.0
D	1.638	91	1317	10.6	667.9	662.9 ²	663.4	0.5
E	1.870	409	4225	3.3	667.9	665.5 ²	666.2	0.7
F	2.212	375	3235	4.3	667.9	666.8 ²	667.5	0.7
G	2.366	420	2896	4.8	667.9	667.6 ²	668.3	0.7
H	2.750	208	2096	6.6	672.5	672.5	673.4	0.9
I	2.991	354	2591	5.4	674.9	674.9	675.8	0.9
J	3.236	159	1196	11.6	677.0	677.0	678.0	1.0
K	3.637	179	1737	8.0	685.8	685.8	686.1	0.3
L	3.905	246	2528	5.5	690.2	690.2	690.5	0.3
M	4.337	160	1570	8.9	695.2	695.2	695.4	0.2
N	4.723	168	1928	7.2	702.4	702.4	702.4	0.0
O	5.054	138	1426	9.7	705.1	705.1	705.4	0.3
P	5.625	244	2432	5.7	711.4	711.4	711.9	0.5

¹MILES ABOVE MOUTH²ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM OHIO RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF JEFFERSON, OH

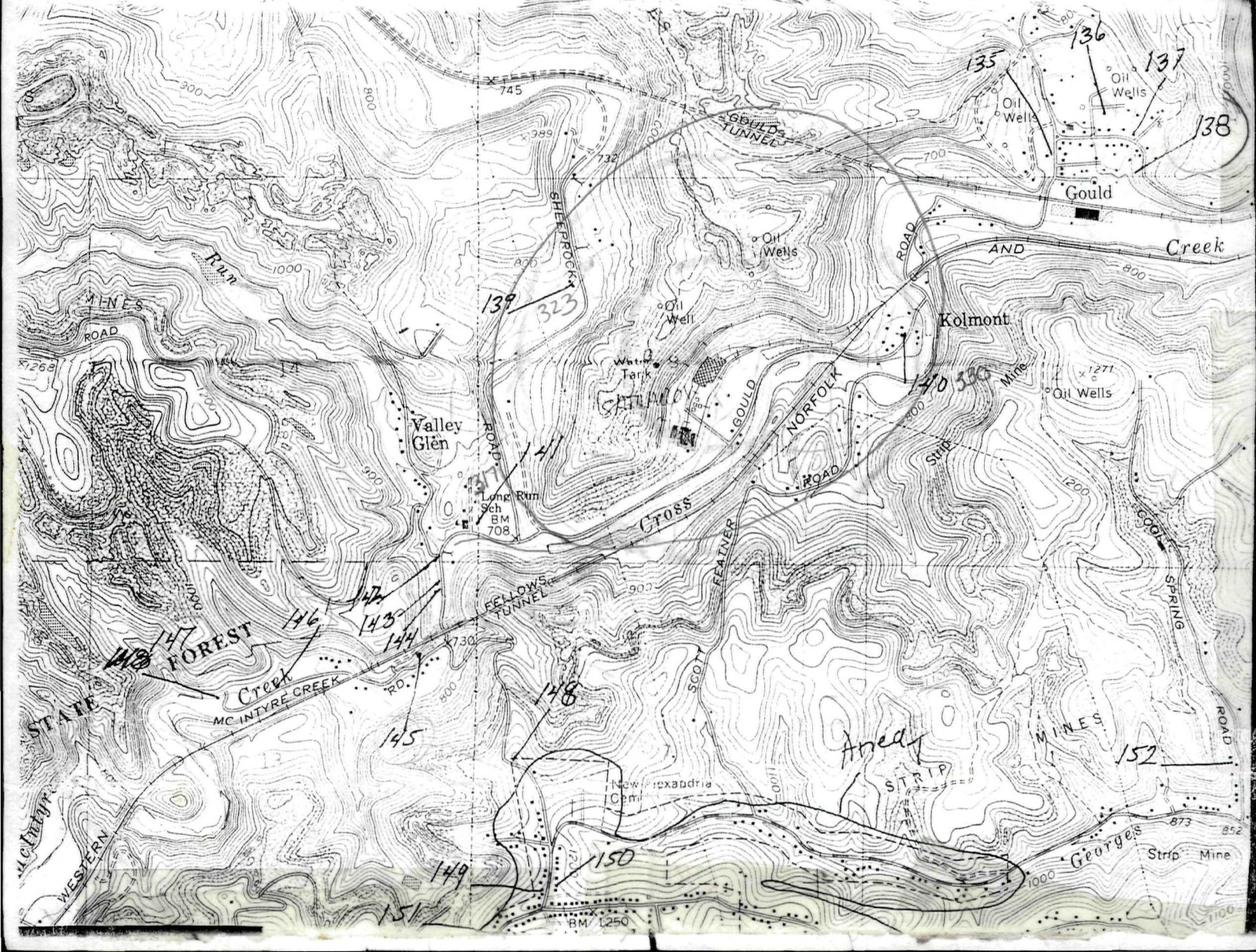
(UNINCORPORATED AREA)

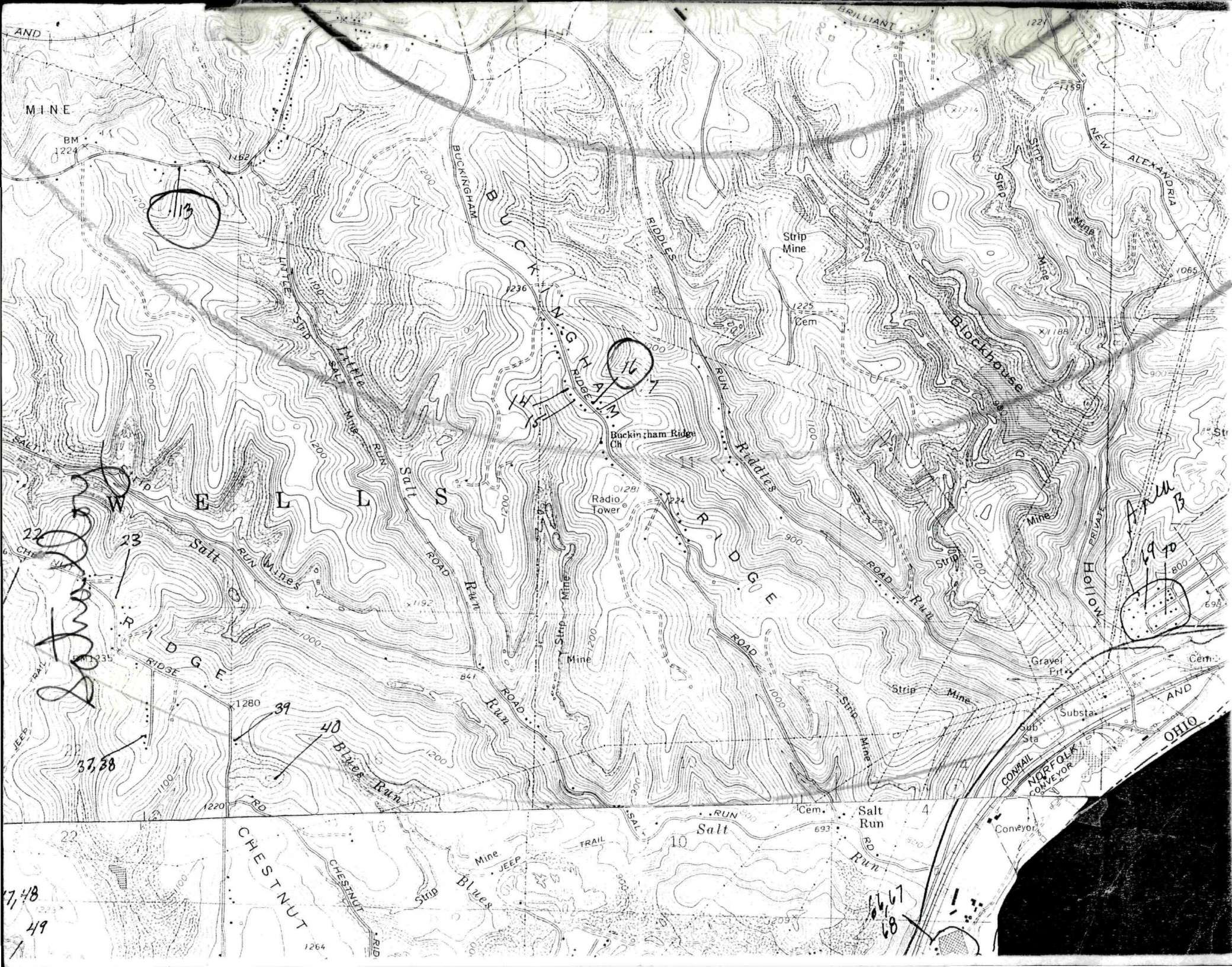
FLOODWAY DATA

CROSS CREEK

TABLE 1 - SUMMARY OF DISCHARGES

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA</u>	<u>PEAK DISCHARGES (CFS)</u>			
	<u>SQ MILES</u>	<u>10-YEAR</u>	<u>50-YEAR</u>	<u>100-YEAR</u>	<u>500-YEAR</u>
OHIO RIVER					
At New Cumberland Lock and Dam	23,870	299,000	375,000	411,000	485,000
YELLOW CREEK					
At mouth	224	8,740	13,700	17,200	26,700
NORTH FORK YELLOW CREEK					
At mouth	59.5	3,870	6,450	8,000	11,900
WILLS CREEK					
At mouth	15	1,750	3,230	4,190	7,000
CROSS CREEK					
At mouth	128	7,090	11,400	13,900	20,600
SHORT CREEK					
At mouth	145	6,670	10,600	13,300	20,300
Upstream of confluence of Little Short Creek	127	6,100	9,780	12,500	19,000
Downstream of confluence of Dry Fork	118	5,900	9,440	12,000	17,900
Upstream of confluence of Dry Fork	110	5,500	9,020	11,300	17,500
Upstream of confluence of Piney Fork	87	4,870	7,830	10,000	15,000
PINEY FORK					
At mouth	22.6	N/A	N/A	4,068	N/A





School

323

Glasures

283-4715

356

RT #160we

17

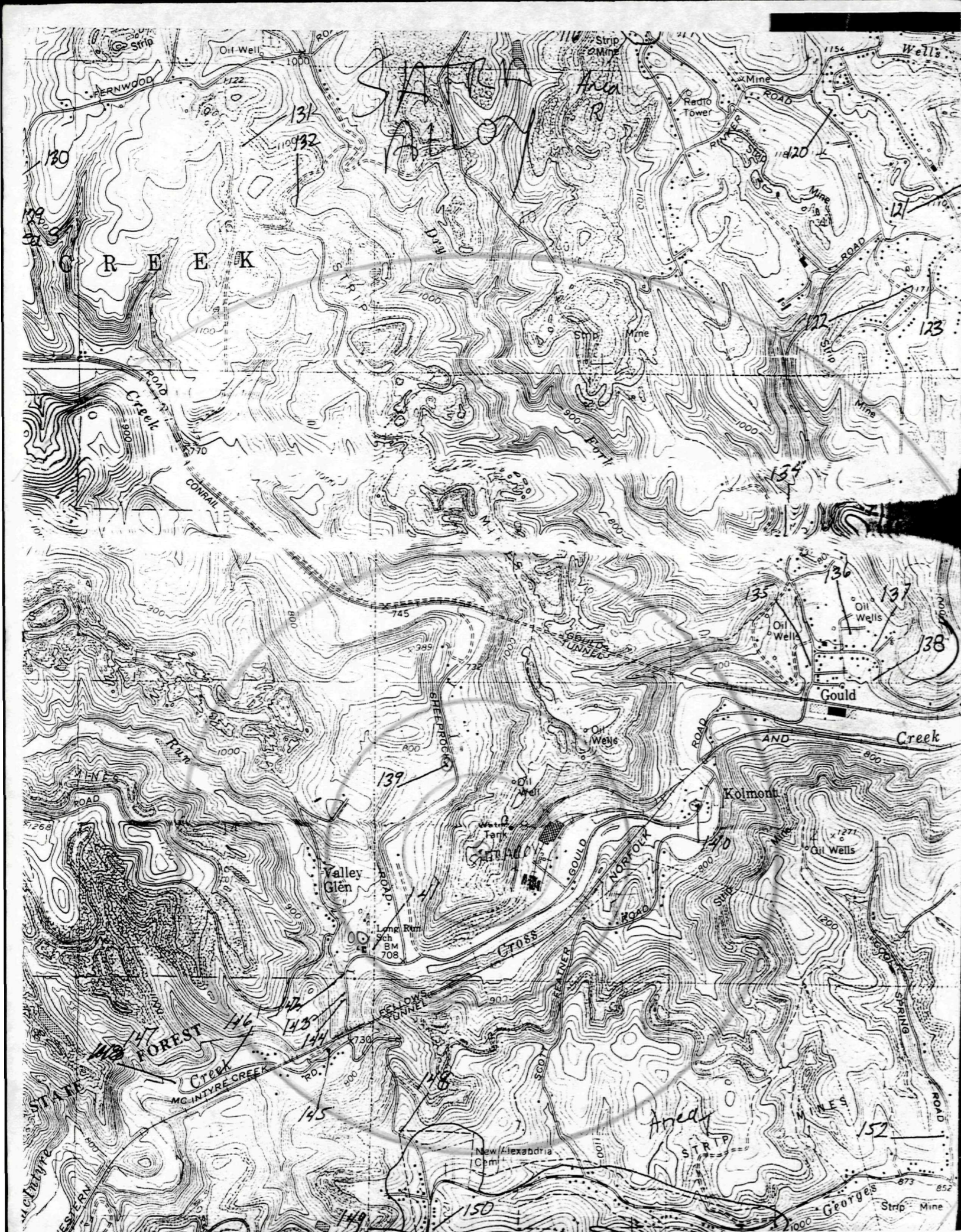
Q

Clas

JJ Presley

356

Bezak 320



FILED

Date : 10/5/90

Date Received : 9/4/90

Date Extracted : 9/18/90

Date Analyzed : 9/28/90

Analysis For : Satra

ASAP # : 9009-033

Customer I.D. : Midstream

TCLP Contaminants

<u>PARAMETER</u>	<u>DETECTION LIMIT mg/L</u>	<u>RESULTS mg/L</u>
Benzene	0.005	0.014 -
Carbon tetrachloride	0.005	BDL
Chlorobenzene	0.005	BDL
Chloroform	0.005	BDL
o-Cresol	0.01	BDL
m-Cresol	0.01	BDL
p-Cresol	0.01	BDL
1,4-Dichlorobenzene	0.01	BDL
1,2-Dichloroethane	0.005	BDL
1,1-Dichloroethylene	0.005	BDL
2,4-Dinitrotoluene	0.01	BDL
Hexachlorobenzene	0.01	BDL
Hexachlorobutadiene	0.01	BDL
Hexachloroethane	0.01	BDL
Methyl ethyl ketone	0.05	0.541 -
Nitrobenzene	0.01	BDL
Pentachlorophenol	0.05	BDL
Pyridine	0.05	BDL
Tetrachloroethylene	0.005	BDL
Trichloroethylene	0.005	BDL
2,4,5-Trichlorophenol	0.01	BDL
2,4,6-Trichlorophenol	0.01	BDL
Vinyl chloride	0.005	BDL

BDL = Below Detection Limit

Method : EPA SW 846(8240,8270)

SURROGATE RECOVERIES

ASAP # : 9009-033

Customer I.D. : Midstream

<u>PARAMETER</u>	<u>% RECOVERY</u>	<u>ACCEPTABLE LIMITS</u>
Volatile Organic Compounds		
1,2-Dichloroethane-d4	90	70 - 121
Toluene-d8	90	81 - 117
Bromofluorobenzene	104	74 - 121
BN/AP Compounds		
Nitrobenzene-d5	135	23 - 120
2-Fluorobiphenyl	94	30 - 115
Terphenyl-d14	105	18 - 137
2-Fluorophenol	51	25 - 121
Phenol-d6	42	24 - 133
2,4,6-Tribromophenol	0	10 - 122

Date : 10/5/90

Date Received : 9/4/90
Date Analyzed : 9/28/90

Analysis For : Satra

ASAP # : 9009-033

Customer I.D. : Midstream

CHARACTERISTIC of TCLP
METALS

<u>ELEMENT</u>	<u>DETECTION LIMIT mg/L</u>	<u>RESULTS mg/L</u>
Arsenic	0.2	BDL
Barium	0.001	0.17
Cadmium	0.01	0.01
Chromium	0.01	2.32
Lead	0.05	0.10
Mercury	0.0002	BDL
Selenium	0.15	BDL
Silver	0.1	BDL

BDL = Below Detection Limit

Methods : EPA Method SW 846(6010)
Mercury SW 846(7470)
Extraction SW 846(1311)

ATTACHMENT B

CHRONOLOGICAL DATA

TDD: 05-9010-014

SITE ASSESSMENT

DUE DATE: 12/15/1991

PAN: EOH0945SAA

SATRA CONCENTRATES

STEUBENVILLE, OHIO

Satra Concentrates, formerly Satralloy, is a ferroalloy facility located 5 miles southwest of Steubenville, Jefferson County, Ohio.

- 1974 Satralloy started operations as a ferrochromiumsilicon manufacturer.
- 1979 Satralloy installed baghouses to minimize emissions of chrome ore dust introduced into the ambient air. Satralloy generated substantial quantities of slag/sludge and baghouse dust wastes containing K090 and K091. The wastes generated were disposed of in an on-site open dump.
- 1982 Due to the high operating cost of the ferroalloy manufacturing process and the absence of market for these products Satralloy ceased this process in December 1982.
- 1984 Satralloy started reclaiming ferroalloy via a water concentrate process for slag that was generated as a by-product from the previous operations. The facility's name was changed to Satra Concentrates
- 1986 OEPA noted that Satra Concentrates disposed of 100,000 tons of high carbon slag and 700,000 tons of low carbon slag in an open dump on-site. The Ohio EPA SEDO cited Satralloy/Satra Concentrates on January 24 for open dumping of solid wastes on-site.

1987 On May 4, 1987 the U.S. EPA terminated the interim status form of Satralloy and closed the U.S. EPA ID# OHD010467538 which had been applied to the site.

1988 On July 21, 1988, Scott Bergreen of Ohio EPA classified the site as medium priority for future site assessment activities.

1989 On march 13, 1989, K090 and K091 wastes were excluded from the list of Bevill Amendment Wastes and included into RCRA program.

The Ohio EPA noted that material which sloughed off the excluded K090 & K091 wastepile intermixed with adjacent slag material which was being excavated by Satra Concentrates personnel. Ohio EPA asserts that this constitutes an active managment of K090 & K091 waste after the efective date of the de-listing of K090 & K091 wastes from the Bevill Waste Amendment and therefore makes the site operator subject to the related RCRA regulations.

1991 On October 24, 1991, TAT drove by the perimeter of the site in an effort to determine the scope of work for the site assessment activities. During this site visit TAT interviewed the facility operator, and the safety and law enforcement officials in Jefferson County.